USSR

UDC 519.21

LEVIN, B. R., and FOMIN, YA. A.

"Stochastic Characteristics of Rejections of Random Processes"

Nelineyn. i optimal'n sistemy - Sbornik (Nonlinear and Optimal Systems - Collection of Works), Moscow, "Nauka," 1971, pp 381-392 (from Referativnyy Zhurnal - Matematika, No 8, Aug 71, Abstract No 8V141)

Translation: Several new results of the theory of rejections of random processes are presented. An exact expression was derived for the probability density of the time of the first attainment of a given level by a continuous non-Markovian process. Distributions of the duration of rejections and the time for first achievement of a given level were found for random sequences with restrictions on statistical relations, as well as the mean value and dispersion of these distributions. Approximation methods were also formulated. An approximate expression was found for the probability density of rejection duration in explicit form. Distributions of the duration of rejections of the envelope of the signal-and-noise total were found.

Based on an approximation of a random process by a sequence of random variables, approximation distributions were found for the duration of rejections of a steady Galssian process and its envelope and the distribution of time

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LEVIN, B. R., and FOMIN, YA. A., Nelineyn. i optimal'n. sistemy - Sbornik, Moscow, "Nauka," 1971, pp 381-392

for the first attainment of a given level by this process. Theoretical results agree satisfactorily with experimental findings. Author's abstract.

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USSR

UDC 621.391.1:519.2:621.372.54

LEVIN, B. R.

"Some Problems of Nonparametric Statistical Synthesis of Signal Detectors Against a Noise Background"

Radioelektronika v nar. kh-ve SSSR. Ch. 1 — V sb.(Radio Electronics in the National Economy of the USSR. Part 1 — collection of works), Kuybyshev, 1970, pp 10-13 (from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4A51)

Translation: The possibility of indicating the structure of an optimal receiver in the case of nonadditive noise and nonnormal distribution is completed. The author assumes that in the case of long observation times the maximum likihood estimates are no worse than Bayes. The bibliography has 5 entries.

1/1

USSR UDC: 519.24

KUZNETSOV, V. P., LEVIN, B. R.

"Invariant Resolving Functions and the Method of Maximum Plausibility in the Case of an Undefined Situation"

V sb. Obnaruzh. i raspoznavaniye. Planir. eksperimentov (Detection and Recognition. Planning of Experiments--collection of works), Moscow, "Nauka", 1970, pp 11-18 (from RZh-Kibernetika, No 1, ~~Dec 70~~ Jan 71, Abstract No 1V150)

Translation: Let us represent the observed process $X(t)$ in the form

$$X(t) = f_\theta[s, n; t], \qquad (1)$$

where f is a predetermined function, $s(t)$ and $n(t)$ are random processes and θ is "a variable parameter of the situation, which describes the indefiniteness" of the given model (this type of model of the observed process is useful for instance in studies of communications systems). In this paper the authors examine problems of constructing invariant resolving devices for detecting or isolating the process $s(t)$. A resolving function $\phi(x)$ is called "invariant to the parameter θ" if for any s and n its value d is independent of the value of the parameter θ. Invariant resolving functions of this type form a class of functions $\phi[T(x)]$ of the maximum invariant $T(x)$

KUZNETSOV, V. P., LEVIN, B. R., Obnaruzh. i raspoznavaniye. Planir. eksperimentov, Moscow, "Nauka", 1970, pp 11-18

induced by transformation group G of the sample space. Group G is generated by transformations of the sample space which correspond to all poasible changes in the parameter θ. It is shown that with certain additional restrictions, called conditions of admissibility of model (1), the method of maximum plausibility leads to invariant resolving functions. Yu. Shanakov.

UDC 621.39.19:519.27

USSR

LEVIN, B. R.

"Optimal Algorithms of Signal Detection Proof Against Change in A Priori Data"

Kiev, Izvestiya Vuzov SSSR-Radioelektronika, Vol 13, No 2, 1970, pp 109-121

Abstract: At the present time, the Bayes approach to the theory of optimal synthesis, based on the criterion of minimum average risk, is widely used. This method, however, involves difficulties. Even if the mathematical difficulties in it are overcome, the realization of solutions of signal detection problems based on it is barely possible. Thus, the receiver designed for additive, normal noise turns out to be much less effective for nonadditive noise differing markedly from normal. The author proposes that these difficulties can be overcome by algorithms which are stable in the face of changes in the a priori data. The search for such algorithms can be guided by nonparametric mathematical statistics. This latter method, however, may involve mathematical difficulties which are practically impossible to overcome. The author asserts his conviction that a promising prospect is offered by investigation of the asymptotic behavior of the optimal algorithms for treating signal processes when the chosen algorithm parameter increases without limit. He

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LEVIN, B. R., Izvestiya Vuzov SSSR-Radioelektronika, Vol 13, No 2, 1970, pp 109-121

discusses asymptotically optimal algorithms for signal detection in a background of arbitrarily formed noise, and finds an asymptotically optimal algorithm for the detection of a quasi-determined signal by independent sampling. Post-detector optimal algorithms are also developed in view of the difficulties connected with signal processing in the high-frequency strip and carried over to the post-detector or video receiver circuits. The article concludes with a short review of methods other than that proposed by the author, who apologizes for the brevity of the review but suggests a reading of the eighth chapter of "Communication Theory" written by A. V. Balakrishnan and published by McGraw-Hill.

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Acc. Nr: AP0042262 L Ref. Code: UR0103

PRIMARY SOURCE: Avtomatika i Telemekhanika, 1970, Nr 1, pp 54-64

COMPLETE PROBABILITY OF ERROR IN CLASSIFICATION OF NORMAL AGGREGATES DIFFERING IN AVERAGE VECTORS

Levin, B. R.; Troitskiy, Ye. V.

There is investigated a complete probability of error in the classification of two normal aggregates with a general and known matrix of covariances. There is elucidated the asymptotic behaviour of the probability of error of the classification under large dimensions of the space properties. There have been formulated the requirements to the property «quality» for the compensation of the multidimensional effect. There is presented a comparative analysis of the asymptotic behaviour of the probability of error of the classification when using various statistics. The data of a statistic experiment are stated.

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REEL/FRAME 19760196

1/3 . 021 UNCLASSIFIED PROCESSING DATE--09DCT70
TITLE--OPTIMAL ALGORITHMS OF SIGNAL DETECTION PROOF AGAINST CHANGE IN A PRIORI DATE -U-
AUTHOR--LEVIN, B.R.

COUNTRY OF INFO--USSR

SOURCE--KIEV, IZVESTIYA VUZOV SSSR RADIOELEKTRONIKA, VOL 13, NO 2, 1970, PP 109-121
DATE PUBLISHED--------70

SUBJECT AREAS--NAVIGATION

TOPIC TAGS--SIGNAL DETECTION, ALGORITHM, SIGNAL NOISE SEPARATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1991/1446 STEP NO--UR/0452/70/013/002/0109/0121

CIRC ACCESSION NO--AP0110941

UNCLASSIFIED

CIRC ACCESSION NO--AP0110941

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AT THE PRESENT TIME, THE BAYES APPROACH TO THE THEORY OF OPTIMAL SYNTHESIS, BASED ON THE CRITERION OF MINIMUM AVERAGE RISK, IS WIDELY USED. THIS METHOD, HOWEVER, INVOLVES DIFFICULTIES. EVEN IF THE MATHEMATICAL DIFFICULTIES IN IT ARE OVERCOME, THE REALIZATION OF SOLUTIONS OF SIGNAL DETECTION PROBLEMS BASED ON IT IS BARELY POSSIBLE. THUS, THE RECEIVER DESIGNED FOR ADDITIVE, NORMAL NOISE TURNS OUT TO BE MUCH LESS EFFECTIVE FOR NONADDITIVE NOISE DIFFERING MARKEDLY FROM NORMAL. THE AUTHOR PROPOSES THAT THESE DIFFICULTIES CAN BE OVERCOME BY ALGORITHMS WHICH ARE STABLE IN THE FACE OF CHANGES IN THE A PRIORI DATA. THE SEARCH FOR SUCH ALGORITHMS CAN BE GUIDED BY NONPARAMETRIC MATHEMATICAL STATISTICS. THIS LATTER METHOD, HOWEVER, MAY INVOLVE MATHEMATICAL DIFFICULTIES WHICH ARE PRACTICALLY IMPOSSIBLE TO OVERCOME. THE AUTHOR ASSERTS HIS CONVICTION THAT A PROMISING PROSPECT IS OFFERED BY INVESTIGATION OF THE ASYMPTOTIC BEHAVIOR OF THE OPTIMAL ALGORITHMS FOR TREATING SIGNAL PROCESSES WHEN THE CHOSEN ALGORITHM PARAMETER INCREASES WITHOUT LIMIT. HE DISCUSSES ASYMPTOTICALLY OPTIMAL ALGORITHMS FOR SIGNAL DETECTION IN A BACKGROUND OF ARBITRATILY FORMED NOISE, AND FINDS AS ASYMPTOTICALLY OPTIMAL ALGORITHM FOR THE DETECTION OF A QUASI DETERMINED SIGNAL BY INDEPENDENT SAMPLING. POST DETECTOR OPTIMAL ALGORITHMS ARE ALSO DEVELOPED IN VIEW OF THE DIFFICULTIES CONNECTED WITH SIGNAL PROCESSING IN THE HIGH FREQUENCY STRIP AND CARRIED OVER TO THE POST DETECTOR OR VIDEO RECEIVER CIRCUITS.

3/3 021 UNCLASSIFIED PROCESSING DATE--090CT70

CIRC ACCESSION NO--AP0110941

ABSTRACT/EXTRACT--THE ARTICLE CONCLUDES WITH A SHORT REVIEW OF METHODS OTHER THAT THAT PROPOSED BY THE AUTHOR, WHO APOLOGIZES FOR THE BREVITY FO THE REVIEW BUT SUGGESTS A READING OF THE EIGHT CHAPTER OF "COMMUNICATION THEORY" WRITTEN BY A. V. BALAKRISHNAN AND PUBLISHED BY MCGRAW-HILL.

UNCLASSIFIED

USSR

UDC: 621.391.1:51

LEVIN, B. R., Active Member of the Society

"Object and Methods of Statistical Radio Engineering"

Moscow, Radiotekhnika, No. 5, 1970, pp 14-19

Abstract: This is a partly philosophical and partly historical assessment of the role of statistics in physics in general and information theory in particular. The author defines information theory as a combination of mathematical methods, most of them in probability and statistics, applied to problems in the description, processing, storage, transmission, and concepts of information, and is therefore the mathematical basis of cybernetics. He discusses such projects as determinism and chance (in which the names of Newton, Laplace, and Lenin figure), mathematics, deterministic and probability conceptions, scientific methodology, the synthesis of communication systems, the struggle with a priori indeterminacy, and the Soviet school of statistical radio engineering. In connection with the last-named category, he asserts that the mathematical bases of statistical radio engineering, the theory of random processes and the theory of solutions, are primarily connected with the works of A. N. Kolmogorov, A. Ya. Khinchin, A. Wal'd, and R. Fisher. The names of many other Russians involved in statistical communication are also given. A bibliography of 50 titles is appended.
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USSR

LEVIN, B. R.

"In the NTORES imeni A. S. Popov"

Moscow, Radiotekhnika, Vol 25, No 9, 1970, pp 107-108

Abstract: The initials of the title stand for Scientific and Technical Radio Engineering Society, and this article is a report on a meeting of that Society's information theory section devoted to problems of education of radio engineers. The meeting took place on 30 March 1970. It was attended by scientists and technical instructors of the VUZ schools, and by engineers from Moscow, Leningrad, Kiev, Riga, Ulyanovsk, Gorky, Kuybyshev, Vladimir, and Murom. A list of names of the participants is given, and the ideas discussed are enumerated. Specialists with a good theoretical preparation are required for the rapid development and exploitation of new outgrowths of industry. There is also a need for specialization in system technology to keep pace with the introduction and the expansion of integrated circuits and solid-state applications. Such specialists should have thorough grounding in information theory in the broad sense, including statistical radio engineering, as well as in the theory of signal transmission, coding theory, reliability theory, and statistical modeling on electronic computers. The following resolutions were voted: to

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APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R002201810002-5"

USSR

LEVIN, B. R., Radiotekhnika, Vol 25, No 9, 1970, pp 107-108

simplify the hierarchy for considering needs for changes in study programs for information theory and special mathematical divisions; to recommend the creation of special applied mathematics cadres for establishing courses in probability theory, random process theory, mathematical statistics, the theory of solutions, information theory, and statistical radio engineering; to consider the publication of textbooks for students of radio engineering, information theory, electronics, and communication; to consider the best use of methods and results of information theory in the study of other disciplines; to consider special required research in radio engineering and communication to predict future directions of these pursuits.

USSR UDC: 538.245

ZUYEV, V. Ye., LEVIN, B. Ye., STANISHEVSKAYA, S. P., DUBROSSARSKAYA, V. Ya.

"A Method of Reducing Dielectric Losses in SHF Ferrites"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 4, Feb 71, Author's Certificate No 292195, Division H, filed 31 Jul 69, published 6 Jan 71, p 140

Translation: This Author's Certificate introduces a method of reducing dielectric losses of SHF ferrites made by hot pressing. As a distinguishing feature of the patent, the procedure is designed for oxidizing the ferrite during pressing, and for simplifying technology. Materials which dissociate at the hot pressing temperature with the release of oxygen are added to the initial charge.

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1/2 024 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--KINETICS OF GRAIN GROWTH IN SAMPLES OF ALLOYED FERRITES -U-

AUTHOR-(03)-GORELIK, S.S., LEVIN, B.YE., NAZARCHIK, N.A.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., CHERN. MET. 1970, 13(1), 132-5

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--GRAIN GROWTH, FERRITE, SOLID KINETICS, NICKEL COMPOUND, ZINC COMPOUND, IRON OXIDE, TUNGSTEN TRIOXIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1981/0596 STEP NO--UR/0148/70/013/001/0132/0135

CIRC ACCESSION NO--AT0050603

UNCLASSIFIED

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R002201810002-5"

2/2 024 UNCLASSIFIED PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AT0058603

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KINETICS OF GRAIN GROWTH WERE STUDIED FOR NI SUB0.5 ZN SUB0.5 FE.SUB2 O SUB4 WITH AND WITHOUT ALLOYING WITH WO SUB3 AND CUO. THE GROWTH PROCESS WAS STUDIED DURING ISOTHERMAL HOLDS AT 1200 ADN 1280DEGREES. CURVES FOR THE SIZE DISTRIBUTION OF THE GRAINS AND FOR THE DEPENDENCE OF THE MAX. SIZE ON THE HOLD TIME WERE FOUND. AS THE HOLD TIME IS INCREASED, THE AV. SIZE INCREASES FOR THE UNALLOYED SAMPLES, AND NEITHER VERY LARGE OR VERY SMALL GRAINS ARE PRESENT. FOR THE ALLOYED SAMPLES THE GROWTH PROCESS IS DIFFERENT. THERE IS AN UNEVEN GRAIN GROWTH WHICH IS NATURAL TO SECONDARY RECRYSTN. A SMALL PART OF THE CRYSTALLITES BEGINS TO GROW VIGOROUSLY, ABSORBING THE INITIAL GRAINS WHICH WERE EQUAL IN SIZE. AS THE HOLD TIME IS INCREASED, THE LARGE GRAINS BECOME LARGER, THEIR BOUNDARIES BECOME ALIGNED, AND THE SMALL GRAINS BETWEEN THEM ARE ABSORBED. THE SIZE DISTRIBUTION SHOWS 2 WIDELY SEPD. MAX.; CONSEQUENTLY, THERE ARE 2 GROUPS OF GRAINS WHICH DIFFER GREATLY IN SIZE. AS THE HOLD TIME IS INCREASED, THIS SIZE DIFFERENCE INCREASES. THUS, THE SECONDARY RECYRSTN. IS ACCOMPANIED BY A MARKED DIFFERENCE IN GRAIN SIZE, WHICH GRADUALLY DISAPPEARS IN THE COURSE OF THE PROCESS. A CALCN. MADE FOR FERRITES WITH THE COMPN. NI SUB0.5 ZN SUB0.5 FE SUB2 O SUB3 SHOWED THAT THE ACTIVATION ENERGY FOR GRAIN GROWTH IS 80 KCAL-MOLE.

UNCLASSIFIED

1/2 010 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--QUANTITATIVE X RAY DIFFRACTION ANALYSIS BY THE SUPERIMPOSING OF STANDARD DIFFRACTION LINES -U-
AUTHOR--LEVIN, B.Z.

COUNTRY OF INFO--USSR

SOURCE--ZAVOD. LAB. 1970, 36(1) 46-7

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, METHODS AND EQUIPMENT

TOPIC TAGS--QUANTITATIVE ANALYSIS, X RAY DIFFRACTION ANALYSIS, QUARTZ, CALCITE, SODIUM CHLORIDE, CORUNDUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1983/0304 STEP NO--UR/0032/70/036/001/0046/0047

CIRC ACCESSION NO--AP0053289
UNCLASSIFIED

2/2 010 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0053289

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN EQUATION FOR QUANT. X RAY DIFFRACTION ANAL. BY THE INNER STD. METHOD WAS DERIVED. THE EQUATION WAS EXAMD. ON 4 MIXTS. OF CALCITE, CORUNDUM, AND QUARTZ WITH DIFFERENT AND KNOWN CONCNS. OF THE COMPONENTS. CURVES OF THE DEPENDENCE OF THE RATIO OF THE INTENSITIES OF LINES OF CALCITE AND NACL (THE INNER STD.) ON THE CALCITE CONCN. ARE GIVEN. COMPARISON OF THE ANAL. DATA WITH THE COMPN. OF THE MIXTS. SHOWED THAT THE ERROR WAS LESS THAN 3.5PERCENT ABS.

UNCLASSIFIED

USSR

UDC: 8.74

LEVIN, D. Ya., NEKRASOV, G. I.

"A Programming System for Machine Translation Problems (Algorithmic Language)"

V sb. Probl. kibernetiki (Problems of Cybernetics--collection of works), vyp. 24, Moscow, "Nauka", 1971, pp 123-146 (from RZh-Kibernetika, No 4, Apr 72, Abstract No 4V538)

Translation: A language is proposed for recording machine translation algorithms using the "algol" means of expression. Bibliography of 18 titles. Authors' abstract.

1/1

1/2 009 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--CONDITIONS FOR THE MOVEMENT OF PARTICLES OF RAW MATERIAL AND VAPOR GASES IN A RETORT DURING THE PYROLYSIS OF BARK IN SUSPENSION -U-

AUTHOR--LEVIN, E.O.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., KHIM. KHIM. TEKHNOL, 1970, 13(11), 127-9

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--PYROLYSIS, WOOD, FLUIDIZED BED

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0974 STEP NO--UR/0153/70/013/001/0127/0129

CIRC ACCESSION NO--AP0124633

UNCLASSIFIED

2/2 009 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124633

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE PYROLYSIS OF BARK IN A FLUIDIZED BED AT 500-700DEGREES (LEVIN, E. D.; AZHAR, L. P.; EIDUS, B. P.; 1968), CONDITIONS FOR SLOW FALL OUT OF PARTICLES ARE COMMENSURATE WITH THE COUNTERCURRENT FLOW RATE OF GASES AND VAPORS. IN A LARGE LAB. SCALE APP., PARTICLE FLOW RATES OF 0.150-0.141 M-SEC AT 500-700DEGREES, COMPARED TO GAS FLOW RATES OF 0.1-0.2 M-SEC; IN A PILOT PLANT APP., WHICH COMBINES PYROLYSIS IN SUSPENSION AND IN A LAYER, THE PARTICLE FLOW RATES IS 1.51 M-SEC. FACILITY: SIB. TEKHNOL. INST., KRASNOYARSK, USSR.

1/2 016 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--OVERVOLTAGE OF THE SEPARATION OF HYDROGEN ON INDIUM -U-

AUTHOR-(02)-ROTINYAN, A.L., LEVIN, E.D.

COUNTRY OF INFO--USSR

SOURCE--ELEKTROKHIMIYA 1970, 6(3), 328-30

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--LEAD, INDIUM, CADMIUM, TELLURIUM, CHEMICAL SEPARATION, HYDROGEN, ELECTRODE POTENTIAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/1133 STEP NO--UR/0364/70/006/003/0328/0330

CIRC ACCESSION NO--AP0121692

UNCLASSIFIED

2/2 016 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0121692

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE OVERVOLTAGE-LOG C.D. CURVE COMPRISES 3 SECTIONS, 2 LINEAR AND ONE WITH SHARPLY FALLING POTENTIAL IN THE NARROW RANGE OF C.DS. 10 PRIME NEGATIVE 3 -10 PRIME NEGATIVE 2 A-CM PRIME2 AROUND THE ZERO CHARGE POTENTIAL, CHARACTERISTIC ALSO OF PB, CD, AND TE. . THE ZERO CHARGE POTENTIAL FOR METALLIC IN IS SIMILAR TO -0.8 V, AND FOR ELECTROLYTICALLY DEPOSITED IN -0.64 TO -0.67 V. THE STRAIGHT SECTION OF THE CURVE IS SLIGHTLY HIGHER FOR ELECTROLYTIC IN THAN METALLIC, ATTRIBUTABLE TO GREATER ROUGHNESS OF THE ELECTROLYTIC METAL.

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--11DEC70

1/2 017

TITLE--MECHANISM OF THE REDUCTION OF THE PEROXIDE GROUP ON A MERCURY ELECTRODE -U-

AUTHOR-(02)-YARSHCHIKOV, A.V., LEVIN, E.S.

COUNTRY OF INFO--USSR

SOURCE--ELEKTROKHIMIYA 1970, 6(4), 588-90

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--DROPPING MERCURY ELECTRODE, CHEMICAL REACTION MECHANISM, CHEMICAL REDUCTION, PEROXIDE, PHENOL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/1294 STEP NO--UR/0364/70/006/004/0588/0590

CIRC ACCESSION NO--AP0134968

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--11DEC70

2/2 017

CIRC ACCESSION NO--AP0134968

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. H SUB2 O SUB2, CUMENYL HYDROPERCXIDE, AND TERT,BUOOH WERE REDUCED ON A DROPPING HG ELECTRODE IN HCONME SUB2. BU SUB4 NCLO SUB4 WAS USED AS THE INDIFFERENT ELECTROLYTE AND PHENOL IN VARIOUS QUANTITIES WAS ADDED TO THE STUDIED SOLNS. THE PHENOL SERVED AS A PROTON DONOR. THE 3 PEROXIDES YIELDED ONLY 1 POLAROGRAPHIC WAVE, IN FAR NEG. POTENTIAL REGION. INTHE PRESENCE OF PEHNOL THE DIFFUSION CURRENT CONST. WAS TWICE AS LARGE AS IN THE ABSENCE OF PHENOL. IN THE ABSENCE OF THE PROTON DONOR, THE PEROXIDE GROUPS GAVE ONLY 1 ELECTRON WAVE. AS THE AMT. OF PHENOL INTHE SOLN. INCREASED, THE HEIGHT OF THE WAVE INCREASED UNTIL IT REACHED A MAX. CORRESPONDING TO A 2 ELECTRON PROCESS. THE REDN. OF THE PEROXIDE GROUP CAN THUS BE REPRESENTED AS FOLLOWS: ROOH PLYS E YIELDS ROOH PRIME NEGATIVE, ROOH PRIME NEGATIVE PLUS H PRIME POSITIVE YIELDS ROOH SUB2 YIELDS RO TIMES PLUS H SUB2 O; RO TIMES PLUS E YIELDS RO PRIME NEGATIVE.

FACILITY: NAUCH. ISSLED. INST. POLUPROD. KRASITEL., MOSCOW, USSR.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--23OCT7G

TITLE--EXPRESS METHOD FOR THE DETERMINATION OF INCREASED AMOUNTS OF PHENYLALANINE IN BLOOD -U-

AUTHOR--LEVIN, F.B.

COUNTRY OF INFO--USSR

SOURCE--VOPROSY MEDITSINSKOY KHIMII, 1970, VOL 16, NR 3, PP 326-329

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PEDIATRICS, PHENYLALANINE, METABOLIC DISEASE, AMINO ACID ANALYSIS, CHROMATOGRAPHY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0141 STEP NO--UR/0301/70/016/003/0326/0329

CIRC ACCESSION NO--AP0120841

UNCLASSIFIED

2/2 021 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0120841

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPRESS METHOD PERMITTING TO DISCOVER THE INCREASED AMOUNT OF PHENYLALANINE (MORE THAN 7 MG PERCENT) IN CHILDREN WITH PHENYLEKTHONEURIA WAS DEVELOPED. THE PAPER DISK CHROMATOGRAPHY OF DRY PLASMA SAMPLE IS USED. FACILITY: STATE PSYCHO NEUROLOGICAL DISPANCER FOR CHILDREN AND YOUTH, MOSCOW.

UNCLASSIFIED

Steels

USSR UDC 669.14.018.841

BABAKOV, A. A., ZHADAN, T. A., LEVIN, E. L., POSYSAEVA, L. I., and FEL'DGANDLER, E. G. (Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardin)

"Low-Carbon Corrosion-Resistant Steels"

Moscow, Stal', No 9, Sep 72, pp 836-839

Abstract: A survey is presented of investigations on corrosion-resistant -- especially low-carbon -- chromium-nickel steels of the austenitic class. The effect of various components of chemical composition on the susceptibility of the steels to intercrystalline corrosion is considered. It is recommended that carbon content in the steel be reduced and that the solid solution be stabilized by special alloying to prevent the formation of excess phases (σ-phase) or carbides on the grain boundaries. The corrosion properties of new, recently developed steels of the austenitic and ferrite-austenitic class are discussed.

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UDC 669.15.018.8:620.194.2

USSR

ZAKHAROV, YU. V., SERTYUREV, V. P., MARKESHIN, V. S., GRISHIN, A. M., and LEVIN, F. L.

"Stress Corrosion Cracking of Austenitic Steels and Alloys in Boiling 42% Magnesium Chloride"

Sb. tr. TsNII chern. metallurgii (Collection of Works of Central Scientific Research Institute of Ferrous Metallurgy), 1970, vyp. 77, pp 99-101 (from RZh-Metallurgiya, No 3, Mar 71, Abstract No 3I597 by authors)

Translation: A study was made of the effect of Ni (10-40%) on the resistance of austenitic steels and alloys (0.02-0.05% C, ~18% Cr, 1-4% Mn, Ti, Nb) to stress corrosion cracking in boiling 42% magnesium chloride. Ultimate long-term corrosion strength values according to Ni content were determined. The results of the work make it possible to give some explanations of the reasons for the contradictory nature of data in the literature on the effect of alloying elements on the stress corrosion resistance of austenitic steels and alloys. Two illustrations. One table. Bibliography with nine titles.

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USSR

UDC 669.15.018.8:620.196.2

ZAKHAROV, YU. V., LEVIN, F. L., SENTYUREV, V. P., GRISHIN, A. M., and MARKESHIN, V. S.

"Intercrystalline Corrosion of Alloys With 20% Cr and 40% Ni as a Function of Alloying"

Sb. tr. TsNII chern. metallurgii (Collection of Works of Central Scientific Research Institute of Ferrous Metallurgy), 1970, vyp. 77, pp 95-98 (from RZh-Metallurgiya, No 3, Mar 71, Abstract No 3I592 by authors)

Translation: The article investigates the effect of C, Nb, Mn, Si, Cr, N, Al on the resistance of austenitic Fe-Cr-Ni alloys with 20% Cr and 40% Ni to intercrystalline corrosion in the 500-900° range with holding periods up to 5000 hours. It is shown that alloying with manganese and aluminum sharply lowers the resistance of the alloys to intercrystalline corrosion after provoking heatings. A rise in austenitizing temperature to 1200° contributes to a diminution of resistance. One illustration. Two tables.

1/1

USSR

UDC 669.15.018.8

LEVIN, F. L., KONDRAT'YEV, A. I., BABAKOV, A. A., GOLOVIN, A. I., and KLIMOV, S. V.

"Effect of Alloying Elements on Structure and Properties of Chromium-Manganese Steel"

Sb. tr. TsNII chern. metallurgii (Collection of Works of Central Scientific Research Institute of Ferrous Metallurgy), 1970, vyp. 77, pp 119-124 (from RZh-Metallurgiya, No 3, Mar 71, Abstract No 31609 by authors)

Translation: During the start-up of the industrial production of N-containing stainless steel Kh17AG14 (EP213) it was found that the steel is susceptible to the formation of porosity caused by the evolution of N_2 during the crystallization of ingots. Peculiarities of the effect of Ti, C, Ni, and N on the Steel's structure and properties were studied and rational alloying limits assuring the complete elimination of ingot porosity were established. The quality of the metal was improved without any impairment of its physico-mechanical properties. One illustration. One table. Bibliography with two titles.

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USSR

UDC:669.017.1:669.14.018.584

LEVIN, F. L.

"Study of Low-Magnetic Steel"

Spetsial'nyye Stali i Splavy [Special Steels and Alloys--Collection of Works], No 77, Metallurgiya Press, 1970, pp 116-119

Translation; The change in magnetic permeability, mechanical properties, and resistivity as functions of carbon and vanadium content in low magnetic steels based on 18% Cr, 4% Ni, and 10% Mn is established. The strength characteristics of hardened vanadium-containing steel increase with decreasing quantity of ferritic phase when alloyed with carbon, which results from hardening of the solid solution alloyed with carbon and vanadium and is primarily related to the formation of vanadium carbides, insoluble at the austenitization temperature.

As the quantity of ferrite in the structure of the hardened steel increases, the degree of hardening and embrittlement of the metal increases after aging. The process of hardening and embrittlement results from separation of the σ phase from the ferrite component. The aged metal (700°C, 2 hr) has a nonmagnetic structure. 2 figures; 2 tables; 2 biblio. refs.

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USSR

UDC 669.017.1:669.14.018.8

LEVIN, F. L., KONDRAT'YEV, A. I., BABAKOV, A. A., GOLOVIN, A. I., and KLIMOV, S. V.

"Influence of Alloying Elements on Structure and Properties of Chrome-Manganese Steel"

Spetsial'nyye Stali i Splavy (Special Steels and Alloys -- Collection of Works), No 77, Metallurgiya Press, 1970, pp 119-124

Translation: During the process of industrial production of nitrogen-containing Kh17AG14 (EP213) stainless steel, a tendency of the steel to formation of pores resulting from separation of nitrogen during crystallization of ingots, was noted.

The specifics of the influence of titanium, carbon, nickel, and nitrogen on the structure and properties of the steel are studied and effective limits of alloying are determined, providing for complete elimination of porosity of ingots. The quality of the metal was increased without decreasing the physical and mechanical properties of the steel. 1 figures; 1 table; 2 biblio. refs.

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USSR

UDC 669.14.018.8:620.194.2

ZAKHAROV, YU. V., SENTYUREV, V. P., MARKESHIN, V. S., GRISHIN, A. M., and LEVIN, F. L.

"Corrosion Cracking of Austenitic Steels and Alloys in Boiling 42% Magnesium Chloride"

Spetsial'nyye Stali i Splavy (Special Steels and Alloys -- Collection of Works), No 77, Metallurgiya Press, 1970, pp 99-101

Translation: The influence of nickel on the stability of austenitic steels and alloys to corrosion cracking in boiling 42% magnesium chloride is studied. The values of the long-term corrosion resistance limit are determined as functions of the nickel content. The results of the work make it possible to explain the reasons for the contradictory data from the literature on the influence of alloying elements on the resistance of austenitic steels and alloys to corrosion cracking. 2 figures; 1 table; 9 biblio. refs.

1/1

USSR

UDC 669.14.018.584.001.6

BABAKOV, A. A., LEVIN, F. L., KONDRAT'YEV, A. I., GOLOVIN, A. I., KUL'KOVA, M. N., DANILYUK, YE. B., PEVZNER, A. YE., OPANEVICH, G. A., and KRAVCHENKO, I. D.

"Experience in Production of Sheet From 25Kh17N4G15AF2 Steel"

Spetsial'nyye Stali i Splavy [Special Steels and Alloys--Collection of Works], No 77, Metallurgiya Press, 1970, pp 124-131

Translation: The first experimental group of 40-mm sheets of type 25Kh17N4G15AF2 high-strength nonmagnetic steel has been manufactured. Based on studies of the specifics of the production of the steel during various stages of the technological process and study of the properties of the metal produced, practical recommendations are given for the production of sheet. 3 figures; 3 tables.

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USSR

UDC 669.14.018.8

ZAKHAROV, YU. V., LEVIN, F. L., SENTYUREV, V. P., GRISHIN, A. K., and MARKESHIN, V. S.

"Intercrystalline Corrosion of Alloys with 20% Cr and 40% Ni as a Function of Alloying"

Spetsial'nyye Stali i Splavy (Special Steels and Alloys -- Collection of Works), No 77, Metallurgiya Press, 1970, pp 95-98

Translation: The influence of C, Nb, Mn, Si, Cr, N, and Al on the stability of iron-chromium-nickel austenitic alloys with 20% Cr and 40% Ni against intercrystalline corrosion (ICC) is studied in the 500-900°C temperature interval with holding times up to 5,000 hours.

It is demonstrated that alloying of the alloys with manganese and aluminum sharply decreases their resistance to ICC after provoking heating. A decrease in resistance is facilitated by increasing the austenitization temperature to 1200°C. 1 figure; 2 tables.

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USSR

UDC 669.15'24'26'28-194:
620.15:620.17

LEVIN, F. L., BABAKOV, A. A., ABRAMOV, A. A., and ZAKHAROV, Yu. V., Central Scientific Research Institute of Ferrous Metallurgy

"Properties and Structure of Low-Carbon Fe-Ni-Cr-Ti Alloys"

Moscow, Metallovedeniye, No 5, May 70, pp 15-19

Abstract: A study was made of the effect of titanium and carbon on the structural changes and properties of alloys containing 20% Cr and 35% Ni (Kh20N34). Carbon content was varied from 0.02 to 0.07%; Ti content was 1.35% max.

Mechanical testing and phase analysis was done on 15-mm-diameter forged rods which had been austenitized at 1130°C for 45 minutes. Mechanical properties were determined at temperatures of 20°C to 1200°C. Aging for different time intervals at 100°C was done to study the structural stability and properties of the hardened samples. Corrosion testing was done on 3-mm sheet which had been austenitized at 1100 and 1150°C for 20 minutes, water quenched, and aged at 500-900°C for 2000 hours (5000 hours in some cases).

It was found that the mechanical properties of Kh20N34+Ti did not change over the investigated limits. Strength at ambient and elevated temperatures was a function of the carbon content. At a Ti/C ratio of 14 the ductility and impact

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USSR

LEVIN, F. L., et al., Metallovedeniye, No 5, May 70, pp 15-19

strength are increased at elevated temperatures. Any further increase in the Ti/C ratio lowers these properties. Aging the alloys is accompanied by precipitation of $M_{23}C_6$ carbides into the chromium; if the Ti content is high, TiC is formed. Maximum embrittlement and strength are exhibited when, along with the carbides, the Ni_3Ti phase is formed.

Resistance to intercrystalline corrosion is improved when the carbon content is reduced. Titanium, which bonds the carbon into stable carbides, increases resistance to intercrystalline corrosion. Alloys with 0.02-0.04% C, at a Ti/C ratio equal to or greater than 29, don't exhibit a tendency to intercrystalline corrosion after aging at temperatures above 500°C. Decreasing the Ti/C ratio increases intercrystalline corrosion attack and reduces the time for this attack to take place.

2/2

USSR

UDC 669.14'786:541.123.28

IVANOV, B. S., KONDRAT'YEV, A. I., TOMILIN, I. A., LEVIN, F. L., and MEL'KUMOV, I. N., Moscow

"Causes of Formation of Gas Blowholes in Nitrogen-Containing Steel Ingots"

Moscow, Akademiya Nauk SSSR, Izvestiya, Metally, No 6, Nov-Dec 72, pp 108-113

Abstract: A study was made of the effect of weight and ingot quenching conditions on the quality of the macrostructure, solubility of nitrogen in solid and molten steels near the point of crystallization, and structural state of the metal at high temperatures. The mass of the ingot and the quenching regime exerted a weak effect on the reduction in the development of gas porosity in nitrogen-containing steel ingots. The drastic reduction of the solubility of nitrogen during the crystallization of the metal, owing to the formation of the ferrite component, was the principal cause of the origin of gas blowholes in high-alloy nitrogen-containing steel ingots. The formation of gas blowholes is possible with a nitrogen content in the molten metal surpassing its solubility in the crystallizing austenitic component.

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USSR

UDC 621.391.19

LEVIN, G. E.

"Pattern Recognition Device"

USSR Author's Certificate No 310272, filed 23 Jan 70, published 20 Sep 71 (from RZh--Avtomatika, Telemekhanika i vychislitel'naya tekhnika, No 4, Apr 72, Abstract No 4A570P)

Translation: A pattern recognition device is proposed which contains a module for converting an optical image to an electronic image, a standards module, an electronic multiplier module, a module for isolating the extremum, and a display module. In order to expand the classes of recognized objects, it also contains a module for geometric transformation of the image, a decision unit, and optimizer. The module for geometric transformation of the image is connected to the output of the image converter, and the output is connected to the input of the electronic multiplier module, to the output of which the standards module and the module for isolation of the extremum are connected in series. The inputs of the decision module are connected to the outputs of the standards unit and to one of the outputs of the module for isolation of the extremum, and its output is connected to the input of the optimizer, the output of which is connected to the control input of the module for geometric transformation of the image. There are 3 illustrations.

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USSR

UDC 621.391.19

LEVIN, G. E.

"A Pattern Recognition Device"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 23, Aug 71, Author's Certificate No 310272, Division G, filed 23 Jan 70, published 26 Jul 71, p 157

Translation: This Author's Certificate introduces: 1. A pattern recognition device which contains a module for converting an optical image to an electronic image, a module of master images, a module of electronic multipliers, a module for isolating an extremum, and a display module. As a distinguishing feature of the patent, the classes of recognizable objects are extended by adding a geometric image conversion module, a resolver, and an optimizer. The input of the geometric image conversion module is connected to the output of the electron-optical converter, and the output of the geometric image conversion module is connected to the input of the module of electronic multipliers. Connected in series to the output of the electronic multiplier module are the master image

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USSR

LEVIN, G. E., Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 23, Aug 71, Author's Certificate No 310272, Division G, filed 23 Jan 70, published 26 Jul 71, p 157

module and the extremum isolating module. The inputs of the resolver are connected to the outputs of the master image module and to one of the outputs of the extremum isolating module, while the resolver output is connected to the optimizer input. The output of the optimizer is connected to the controlling input of the geometric image conversion module. 2. A modification of this device distinguished by the fact that the section consisting of the electron-optical converter, electronic multiplier module, master image module, and geometric image conversion module is made in the form of a single phototube. Mutually perpendicular cylindrical electron lenses and magnetic coils which effect the geometric conversion of the image are located outside the envelope of the phototube between the photocathode and the electronic multipliers. The collectors of the electronic multipliers which correspond to a single master image are connected together and led out of the envelope.

2/2

USSR

UDC 621.385.292.8

LEVIN, G.E., GRISHIN, M.YE., ROTAPOV, A.M.

"Photoelectron Device"

USSR Author's Certificate No 253951, filed 5 June 68, published 16 June 70 (from RZh--Elektronika i yeye primeneniye, No 12, December 1970, Abstract No 12A243P)

Translation: A photoelectron device is proposed which consists of a photomultiplier with a high resolution time and a resonator coupled with it, which has separate channels for input and output of the signal. With the object of an increase of the signal-to-noise ratio during reception of optical signals modulated in a narrow band of the microwave range, the anode input of the photomultiplier is introduced into the resonator cavity through an input channel and has the form of a loop.

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USSR UDC: 658.562.533

LEVIN, G. I., SHLYAGA, G. I., BARSUKOV, G. Ye.

"A Device for Automatic Monitoring of Operations"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 9, Mar 72, Author's Certificate No 331393, Division G, filed 22 Dec 69, published 7 Mar 72, p 154

Translation: This Author's Certificate introduces: 1. A device for automatic monitoring of operations given by a time schedule. The device contains a display unit and a control unit which is connected to the inputs of a decoder, elapsed time indicator, printout module, and attached printer, and also to the controlling input of a shift register. As a distinguishing feature of the patent, the visibility and efficacy of monitoring are improved by adding a time interval distributor, a module for determining deviations, a module for visualizing the schedule to be monitored, and a module for output of deviations. The inputs of the module for determining deviations are connected to the outputs of the module for visualizing the schedule to be monitored, the decoder, and the time interval distributor. The outputs of the module for determining deviations are connected through the module

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USSR

LEVIN, G. I. et al., USSR Author's Certificate No 331393

for output of deviations to one of the inputs of the indicator and of the printout module. The controlling input of the module for output of deviations is connected to the controlling output of the time interval distributor whose second output is connected to the controlling input of the display unit, while the input of the time interval distributor is connected to the output of the elapsed time indicator. 2. A modification of this device distinguished by the fact that the module for determining deviations contains coincidence circuits which are connected by their two inputs in the diagonal of a matrix whose vertical lines are connected to the outputs of the corresponding delay elements, while the horizontal lines are connected through NOT gates to the corresponding memory elements. The outputs of the delay elements are connected through an OR logic gate to the set terminals of the memory elements.

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USSR

UDC 612.017.2.014.43/.44

LEVIN, G. S. and KHORVAT, G. N., Uzbek Institute of Hematology and Blood Transfusion

"Relationship Between Autoimmunization and Adaptation to Repeated Overexposure to the Sun"

Moscow, Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, No 2, 1973, pp 67-69

Abstract: Ten dogs were exposed to the sun daily for 15 days (40.0 to 40.5°) in two successive summers. Changes in the peripheral blood and immunological parameters were minor the first year. But the second year it took 20 to 30 min longer to overheat the body (due to adaptation to high temperatures) and most of the animals developed leukopenia and anemia. Also, the formation of auto-antibodies to erythrocytes was more pronounced the second summer. It would appear that the autoimmune mechanisms involved in the pathogenesis of sun-induced lesions do not participate in the adaptation process.

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USSR

LEVIN, G. YA.

UDC 547.241

"Acid Chlorides and Anhydrides of Tertiary Alkylaryl Phosphonic Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol XLIII (CV), No 1, 1973, pp 210-211

Abstract: The acid chloride of tertiary butylphenyl phosphonic acid (Ia) has been obtained by hydrolysis of the adduct of tert.-butyl chloride with the complex of phenyldichloro phosphine and aluminum chloride (P. Harrison, et al., J. Am. Chem. Soc., No 93, 2307, 1971). Alcoholysis of this adduct also gives the derivative (Ia) whereas alcolysis of the analogous adduct prepared from tertiary or isobutylbromide leads to a mixture of the acid chloride (Ia) with the corresponding acid chloride (IIa). Similarly, from isoamyl chloride, the acid chloride (Ib) is obtained. On interaction of the tertiary butyl chloride and tertiary butyl bromide with the tolyl dichloro phosphine and aluminum chloride complex, the acid chloride (Ic), a mixture of n and m-isomers and the anhydride (IIC0, the n-isomer, are isolated, and from the isoamyl chloride, the acid chloride (Id).

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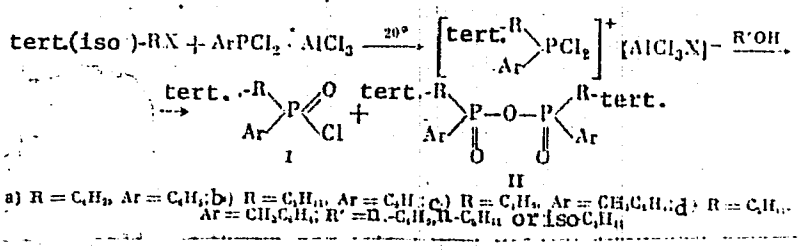
USSR

LEVIN, G. YA., Zhurnal Obshchey Khimii, Vol XLIII (CV), No 1, 1973, pp 210-211



a) R = C_4H_9, Ar = C_6H_5; b) R = C_4H_{10}, Ar = C_6H_5; c) R = C_4H_9, Ar = $CH_3C_6H_4$; d) R = C_4H_{10}, Ar = $CH_3C_6H_4$; R' = n.-C_4H_9, n.-C_4H_{10} or iso-C_4H_{10}

The structure of the compounds was confirmed by the infrared spectra, the paramagnetic resonsnace spectra and chemical conversions. Experimental procedures are presented for obtaining four of the acid chlorides and two of the anhydrides.

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USSR UDC 547.558.1

PETROV, K. A., and LEVIN, G. YA.

"Alkyldiaryl Phosphinates"

Leningrad, Zhurnal Obshchey Khimii, Vol XLIII (CV), No 1, 1973, pp 37-41

Abstract: A convenient procedure is proposed for obtaining alkyldiaryl phosphinates with like and different aryl radicals. The procedure is based on the interaction of aromatic hydrocarbons a with phosphorus trichloride in the presence of aluminum chloride which with a mole ratio of the first two reagents of 1:n where $n \geq 1$, is used primarily to obtain aryldiachlorophosphine. It was shown previously that with a different ratio of the reagents, that is, when $n < 1$, the complex (II) is formed, and when $n \geq 1$, the complexes (I) and (II) are formed [G. Kosolapoff, et al., J. Am. Chem. Soc., No 69, 202, 1947; N. Nochina, et al., J. Synth. Org. Chem. Japan, No 28, 969, 1970]

$$C_6H_6 + PCl_3 + AlCl_3 \rightarrow \underset{I}{C_6H_5PCl_2 \cdot AlCl_3} + \underset{II}{(C_6H_5)_2PCl \cdot AlCl_3}$$

The complexes (II) (when $n < 1$) was not used to obtain the alkyldiaryl phosphinates; on treating with water, diphenyl phosphonous acid was isolated, and on treating with alcohol, alkyldiaryl phosphinite. In thepaper, as a

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PETROV, K. A., and LEVIN, G. YA., Zhurnal Obshchey Khimii, Vol XLIII (CV), No 1, 1973, pp 37-41

result of studying the dependence of the yields of the complexes (I) and (II) on the mole ratio of benzene and phosphorus trichloride (1:n where n is 1/3-1/10) and the reaction time, the optimal conditions of formation of the diaryl derivative of (II) were found.

The methods of synthesizing the alkyldiaryl phosphinates proposed in this paper differ advantageously from the present ones in that they permit various target products to be obtained with high yields in one stage from highly available substances.

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USSR

UDC: 621.385.64

LEVIN, G. Ya., BAN'KOVSKIY, S. P., and MIKHAYLOV, V. I.

"Magnetron Triode With Lens Optics in the Static Mode"

Moscow, Radiotekhnika i elektronika, No 8, 1972, pp 1653-1659

Abstract: In an earlier paper published as an Author's Certificate by the authors named above (No 286781, 1970), a proposal was made to provide the magnetron with lens optics through the use of additional electrodes, thus improving its efficiency in radar, telemetry, and communications. The present paper offers some of the results connected with the development of that device, contains a cutaway view of it, and indicates how it may be used in practice. The advantage of the tube is that, through its lens optics feature, control of the electron beam can be realized without power expenditure and without hindering the beam by metallic obstacles. The electric field is heterogeneous along the axis and has a complex pattern. Basic dimensions of two such magnetron types are given in a table, and curves for static operation of the tube are plotted.

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USSR

UDC: 621.385.64.001.5

LEVIN, G. Ya. and VIGDORCHUK, V. I.

"Effect of Emission on the Characteristics of a Plane Magnetron Diode"

Moscow, Radiotekhnika i elektronika, No 8, 1972, pp 1762-1766

Abstract: This theoretical paper offers a solution to the problem of computing the energy and frequency characteristics of a magnetron if the dependence of these characteristics on the emission from the cathode is known. For obtaining the solution, the authors used methods applied to finding how the electric field at the cathode, the rotating currents, and the dimension of the electron cloud depend on the emission from the cathode in a short emission current interval. The transient process is investigated by a combined solution of the Poisson equation and the equations of electron motion. These are numerically solved by replacing the continuous charge distribution with a combination of discrete charged layers emitted from the cathode. Characteristics of the transient process and of the steady state are also examined. It is noted that a number of practical problems of surface wave magnetrons can be resolved through the use of equations here derived.

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USSR

UDC: 621.385.64.001.5

LEVIN, G. Ya., BAN'KOVSKIY, S. P., and MIKHAYLOV, V. I.

"Generator Mode of the Magnetron Triode With Lens Optics"

Moscow, Radiotekhnika i elektronika, No 8, 1972, pp 1660-1662

Abstract: This article gives the results of investigations into the oscillatory mode of the magnetron triode with lens optics, description of which is given in a paper published in the same issue of the journal noted above (pp 1653-1659). A table in the present paper presents the dimensions of the interaction space of one such tube designed to operate on 1.5 kV and generate a wavelength of 1.4 cm. Curves are plotted for the generated power frequency, the frequency, the anode current, and the current in the control electrode, as functions of the control electrode voltage, and an explanation of the peculiarities in these curves is made. A detailed examination is conducted of how the generated oscillatory power varies with the control electrode voltage. Experiments conducted with the model here described showed that, in the shortwave end of the centimeter range, a modulation frequency differing from the carrier frequency by an order of two to three was possible. The authors thank A. Ya. Usikov for his advice.

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UDC 621.385.633

USSR

BOGOMOLOV, G. D., BORODKIN, A. I., KUSHCH, V. S., LEVIN, G. YA., RUSIN, F. S., CHURILOVA, S. A.

"Investigation of the Excitation System of the 'Comb' Type in an Orotron Regime and a Backward-Wave Tube Regime"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific-Technical Collection. Microwave Electronics), 1970, No 1, pp 97-102 (from RZh--Elektronika i yeye primeneniye, No 7, July 1970. Abstract No 7A141)

Translation: An experimental comparison is made between the work of an orotron [microwave oscillator with oscillatory system in the form of an open resonator--Transl.] and a backward-wave tube. The comparison was accomplished on a model of a millimeter band oscillator in which backward-wave tube and orotron oscillations were excited. The dispersion and control characteristics of both forms of oscillations were investigated and also the levels of the power being generated were compared. The stability of both forms of collector [K] is evaluated. 9 ref. Summary.

1/1

Acc. Nr: AP0040322 Ref. Code: UR0491

PRIMARY SOURCE: Eksperimental'naya Khirurgiya i Anesteziologiya, 1970, Nr 1, pp 78-81

THE INFLUENCE OF AETHER-OXYGEN ANAESTHESIA ON THE COAGULATING AND ANTICOAGULATING SYSTEM OF THE BLOOD AFTER EXPERIMENTAL BURN

G. Ya. Levin

An experiment was carried out on 10 male and female mongrels of varying weight. Burn was caused by open flame under standard conditions. The depth of burn was IIIB—IV stage. A surface area comprised 8—13% of the body surface. A week after burn the animals received an hour of intubation aether-oxygen anaesthesia. Blood was collected prior to anaesthesia, one hour later and 24 hours later after anaesthesia. There were definite changes in the system of blood coagulation. These were: decreased blood coagulation an hour later and increase of these changes after 24 hours after anaesthesia, as seen in the time of plasma recalification and the time of blood coagulation. Causes were probably due to the free heparin in the circulating blood an hour after anaesthesia and increase of the fibrinolytic activity of the blood 24 hours after anaesthesia. The fibrinogen titer rose one hour and 24 hours after aether- oxygen anaesthesia. Dynamics of the prothrombin index coincided with the dynamics of the plasma tolerance to heparin.

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1/2 030 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--INTERACTION OF AN ELECTRON FLOW WITH SURFACE WAVES IN A SEMICONDUCTOR PLASMA -U-

AUTHOR-(04)-BORODKIN, A.I., YAKOVENKO, V.M., LEVIN, G.YA., MAYSTRENKO, YU.V.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(5), 1515-20

DATE PUBLISHED--------70

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TOPIC TAGS--SEMICONDUCTOR PLASMA, SURFACE WAVE, ELECTRON FLOW, ELECTRON INTERACTION, SPACE CHARGE, DIELECTRIC CONSTANT, PLASMA RESONANCE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/0877 STEP NO--UR/0181/70/012/005/1515/1520

CIRC ACCESSION NO--AP0131464

UNCLASSIFIED

2/2 030 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0131464

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPTL. OBSERVATION WAS MADE OF THE INTERACTION OF AN ELECTRON FLUX MOVING IN VACUUM WITH THE SURFACE WAVES IN A SOLID STATE PLASMA IN THE MM RANGE. FROM THE EXPTL. DATA AND THE DISPERSION EQUATION, IT WAS ESTABLISHED THAT THE INTERACTION HAS THE CHARACTER OF AMPLIFICATION OF THE WAVES OF SPACE CHARGE IN THE BEAM MOVING CLOSE TO THE SURFACE OF THE MEDIUM WITH A COMPLEX DIELEC. CONST. THIS INTERACTION IS MOST EFFECTIVE CLOSE TO THE PLASMA RESONANCE FREQUENCY IN THE SEMICONDUCTOR (8 TIMES 10 PRIMEII-SEC).

FACILITY: INST. RADIOFIZ. ELEKTRON., KHARKOV, USSR.

UNCLASSIFIED

USSR

UDC 621.43:62.529

DYUBEK, K. L., LEVIN, I. A., and GAPOYAN, D. T., Candidates of Technical Sciences, Moscow Institute of Automotive Engineering; NAMI (Central Scientific Research Institute of Automobiles and Automobile Engines)

"Investigation and Elimination of High-Frequency Vibrations Originating During the Operation of Wheel Brake Mechanisms"

Moscow, Avtomobil'naya Promyshlennost', No 7, Jul 72, pp 16-18

Abstract: In an investigation of causes of the origination of high-frequency vibrations of brake-drum mechanisms, a study was made by NAMI, jointly with the Moscow Institute of Automotive Engineering, of the conditions of the transition of a statically and dynamically stable system, constituting the brake mechanism in the absence of vibrations, into a dynamically unstable system which predetermines the presence of vibrations. A research procedure by means of wire detectors was developed, which permits a quantitative analysis to be made of the character of the curve of specific pressures with respect to the arc length of the brake lining, with its subsequent evaluation by the graphoanalytic method. The obtained experimental data makes it possible to conduct a refined graphoanalytic calculation of the forces acting in the tested brake mechanisms in the presence, and in the absence, of

USSR

DYUSEK, K. L., et al., Avtomobil'naya Promyshlennost', No 7, Jul 72, pp 16-18

high-frequency vibrations, and to determine the causes of origination of the vibrations. Such a calculation was conducted for the front-brake mechanism of the Moskvich automobile, the form of the curve of the specific pressures that were applied upon it (with and without vibrations) being studied experimentally. Means for the elimination of high-frequency vibrations of the brake mechanism are indicated. 3 figures.

2/2

Lubricants and Lubrication

UDC: 621.9.079:621.892

USSR

LEVIN, I. M., Candidate of Technical Sciences, VOVK, A. I., IVANOV, V. I., and GORENSHTEYN, M. M., Candidate of Technical Sciences

"New Lubricating-Cooling Liquid"

Moscow, Mashinostroitel', No 6, Jun 73, p 31

Abstract: A new lubricating-cooling liquid was developed at the Zhdanovskiy Metallurgical Institute for use in the mechanical processing of aluminum and its alloys (author certificate No 293041). It is a new emulsion of surface-active synthetic substances with the following composition: 0.5-1 percent synthetic wax (complex esters of synthetic fatty acids and high-molecular alcohols), and 0.5-1 percent alkylolamides of C_{10}--C_{16} fraction synthetic fatty acids. The new lubricating-cooling liquid withstood the drop method corrosion testing, and does not have a disagreeable odor, and is not toxic. Comparative tests were conducted involving the new lubricating-cooling liquid, skipidar, castor oil, and ordinary five percent water emulsion. The MI-1M friction machine was utilized with the specimen roller equipped with the VK6 grade hard alloy and the other made from the AD-1 grade aluminum. The MPB-2 microscope was used to measure the width of the band of adhering material on the specimens. The results show that the new lubricating-cooling liquid is equivalent in its properties to skipidar. In drilling, the new liquid reduces metal sticking to the cutting edges in compari-

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USSR

LEVIN, I. M., et al, Mashinostroitel', No 6, Jul 73, p 31

son to the five percent emulsion. The new liquid is recommended for the mechanical processing of aluminum and its alloys and is being currently used at metallurgical plants in the cold rolling process.

LEVIN, I. M.

(29)

TECHNICAL TRANSLATION

FSTC-HT-23-2015-72

ENGLISH TITLE: PROBLEMS OF LASER BEAM DATA TRANSMISSION
PROCEEDINGS OF THE FIRST ALL-UNION CONFERENCE, KIEV, SEPTEMBER 1968

FOREIGN TITLE: PROBLEMY PERADACHI INFORMATSII LAZERNYM IZLUCHENIYEM

AUTHOR: L. A. BERTUGIN, ET AL.

SOURCE: KIEV ORDER OF LENIN STATE UNIVERSITY IMENI T.G. SHEVCHENKO

Translated for FSTC by ACSI

NOTICE

- Title Page -

1/2 015 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--PREPARATION OF SPECIAL PETROLEUM SINTERING ADDITIVES FOR COKING COAL CHARGES -U-

AUTHOR--SUPRUNOV, V.V., LEVIN, I.S.

COUNTRY OF INFO--USSR

SOURCE--KHIM. TVERD. TOPL. 1970, (1), 104-9

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--PETROLEUM PRODUCT, COAL, ASPHALT, COKE, MECHANICAL STRENGTH, BENZENE, SINTERING FURNACE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REFL/FRAME--1990/2044 STEP NO--UR/0467/70/000/001/0104/0109

CIRC ACCESSION NO--AP0109976

UNCLASSIFIED

2/2 . 015 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0109976

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE PREPN. INVOLVED THE CONSECUTIVE OXIDATIVE AND THERMAL CONDENSATION AT 250 AND 350-70DEGREES, RESP., OF HEAVY PETROLEUM RESIDUES LIKE CRACKING RESIDUES, ASPHALTS, AND DEASPHALTIZATION RESIDUES. THE SCHEME AND DESCRIPTION OF A LAB. OXION. APP. ARE GIVEN. THE PROPERTIES OF THE RESIDUES AND THE MECH. STRENGTH OF THE RESULTING COKES ARE TABULATED. THE EXPTL. DATA SHOWED THE ABSENCE OF A CORRELATION BETWEEN THE SOFTENING POINT OF THE ADDNS. AND THE MECH. STRENGTH OF COKE. THE MECH. STRENGTH INCREASED WITH THE COKING RESIDUE IN THE ADDNS. INCREASING TO 50PERCENT AND REMAINED UNCHANGED AT GREATER THAN 50PERCENT COKING RESIDUE. THE OPTIMUM RESULTS WERE OBTAINED FROM ADDNS. WITH SOFTENING TEMP. 180-5DEGREES AND CONTG. SIMILAR TO 50PERCENT COKING RESIDUE, 40-5PERCENT MALTHENES, 25-30PERCENT ASPHALTENES, AND 25-35PERCENT SUBSTANCES INSOL. IN C SUB6 H SUB6.

ZZZZZZZZZZZ UNCLASSIFIED

1/2 013 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--EXTRACTION OF THALLIUM (III) FROM SULFURIC ACID SOLUTIONS BY BIS (2,ETHYLHEXYL) HYDROGEN PHOSPHATE -U-

AUTHOR-(03)-LEVIN, I.S., RODINA, T.F., VORSINA, I.A.

COUNTRY OF INFO--USSR

SOURCE--ZH. NEORG. KHIM. 1970, 15(2), 496-501

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--THALLIUM, SULFURIC ACID, METAL CHEMICAL ANALYSIS, PHOSPHATE, HYDROGEN COMPOUND, SOLVENT EXTRACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1952 STEP NO--UR/0078/70/015/002/0496/0501

CIRC ACCESSION NO--AP0118914

UNCLASSIFIED

2/2 013 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0118914

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. COMPN. OF TL(III) COMPLEXES OF BIS(2,ETHYLHEXYL) H PHOSPHATE (HR), WHICH FORM DURING AN EXTN. OF TL(III) FROM H SUB2 SO SUB4 SOLNS., DEPENDS NOT ONLY ON THE NATURE OF EXTG. SOLVENT BUT ALSO ON H SUB2 SO SUB4 CONCN. EQUIL. CONSTS. FOR TL(III) HR COMPLEX EXTN. BY ORG. SOLVENTS OCTANE, HEPTANE, CYCLOHEXANE, C SUB6 H SUB6, MEPH, ME SUB2 C SUB6 H SUB4, CHCL SUB3, AND CCL SUB4, AT PH 0.5-3.0 ARE GIVEN.

UNCLASSIFIED

USSR

LEVIN, I. Ya.

"Solution of the Problem on Linear Programming by the Gradient Method"

Tr. Leningr. Inzh.-Ekon. In-ta [Works of Leningrad Institute of Engineering and Economics], 1972, No 92, pp 81-86 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V515, by V. Skokov).

Translation: A numerical study is performed of two versions of an iterational method, using a modified Lagrange function and the continuous Arrow-Gurvits gradient method. A quadratic and exponential penalty is used to modify the Lagrange function. In each iteration, a system of differential equations is integrated. The long computation time required by this method for low-dimensionality linear programming problems is noted. The method of Petrzhikovskiy was found to be more effective (RZhMat, 1963, 11V446).

1/1

1/3 019 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--MEASUREMENT OF BIOLUMINESCENCE AT MAXIMUM DEPTHS -U-

AUTHOR-(05)-GITELZON, I.I., LEVIN, L.A., SHEVYRNOGOV, A.P., FILIMONOV, V.S., ARTEMKIN, A.S.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, DOKLADY AKADEMII NAUK SSSR, VOL 191, NO 3, 1970, PP 689-692

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS, EARTH SCIENCES AND OCEANOGRAPHY, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BATHYPHOTOMETER, MARINE BIOLOGY, LUMINESCENCE, OCEANOGRAPHIC INSTRUMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1990/0270 STEP NO--UR/0020/70/191/003/0689/0692

CIRC ACCESSION NO--AT0108574

UNCLASSIFIED

2/3 019 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AT0108574

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE REGISTRY OF BIOLUMINESCENCE IS EVIDENTLY THE ONLY AVAILABLE MEANS FOR STUDYING MANIFESTATIONS OF LIFE OF ABYSSAL ORGANISMS IN SITU. THE PHYSICS INSTITUTE SIBERIAN DEPARTMENT ACADEMY OF SCIENCES USSR HAS DEVELOPED AN ABYSSAL BATHYPHOTOMETER WITH A SELF CONTAINED POWER SOURCE WITH THE REGISTRY OF SIGNALS FROM A PHOTODETECTOR; IT IS CONNECTED TO THE SHIP BY A CABLE. MAGNETIC RECORDING IS USED FOR SIGNAL REGISTRY. AT THE SITE OF THE INSTRUMENT IT WAS DEEMED NECESSARY TO INTRODUCE INTO THE MEDIUM SOME FORM OF EXCITATION BECAUSE MECHANICAL EXCITATION BY THE INSTRUMENT ITSELF IS SCARCELY ADEQUATE AT THE DEPTHS WHERE MEASUREMENTS WERE MADE. THE EXCITATION SOURCE WAS A FLASH LAMP. THE ARTICLE IS ACCOMPANIED BY A BLOCK DIAGRAM OF THE INSTRUMENT. THE BATHYPHOTOMETER OPERATES IN ACCORDANCE WITH A PRESTIPULATED PROGRAM. THE DURATION OF AN INDIVIDUAL FLASH IS 1 MSEC. THE INSTRUMENT CONSISTS OF TWO COUPLED INSTRUMENT PACKAGES, ORIENTED AT AN ANGLE TO ONE ANOTHER IN SUCH A WAY THAT THE OPTICAL AXES OF BOTH PACKAGES INTERSECT AND ARE DIRECTED DOWNWARD. THE LARGER OF THE CONTAINERS HOLDS THE PHOTODETECTOR AND THE POWER SOURCE, THE PROGRAMMED CONTROL SYSTEM AND THE RECORDER. THE SMALLER CONTAINER HOLDS THE FLASH LAMP WITH PROGRAMMED CONTROL AND ITS POWER SOURCE. THE CONTAINERS ARE FABRICATED FROM A TITANIUM ALLOY AND ARE DESIGNED FOR OPERATING AT PRESSURES UP TO 1,500 KG-CM PRIME2, THAT IS, UP TO THE GREATEST OCEAN DEPTHS. THE INSTRUMENT WAS USED ABOARD THE "VITYAZ'" IN DECEMBER 1968 FOR MEASURING BIOLUMINESCENCE IN THE JAPANESE DEEP AT DEPTHS OF 7,000-7,200 M.

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--02OCT70

3/3 019

CIRC ACCESSION NO--AT0108574

ABSTRACT/EXTRACT--THE BATHYPHOTOMETER EXPOSURE TIME AT THE MEASUREMENT HORIZON WAS 60 MINUTES; DURING THIS TIME 18 BIOLUMINESCENT BURSTS WERE REGISTERED. INFORMATION IS GIVEN ON THE AMPLITUDES, DURATIONS AND ENERGIES OF THESE BURSTS.

UNCLASSIFIED

UDC 578.087.8+577.472(26)

USSR

GITEL'ZON, I. I., LEVIN, L. A., SHEVYRNOGOV, A. P., FILIPONOV, V. S., ARTEMKIN, A. S., UTYUSHEV, R. N., and ZAGORODNIY, Yu. A.

"Measurement of Bioluminescence at Great Depths"

Moscow, Doklady Akademii Nauk SSSR, Vol 191, No 3, 1970, pp 689-692

Abstract: The recording of bioluminescence appears to be the only convenient way at present of studying abyssal organisms directly in their habitat. To carry out such investigations, the Institute of Physics of the Siberian Department of the Academy of Sciences USSR developed a bathyphotometric device with autonomous power supply and recording of signals. Magnetic recording is used for the signals coming from the light receiver. The bathyphotometer consists of two hermetically sealed containers joined together. The larger one holds the light receiver, power supply, program control system, and recording apparatus, while the smaller one holds a flashing lamp with program control and power supply. Measurements made in December 1968, by the research vessel Vityaz' in the Sea of Japan at a depth of 7000-7200 m are briefly described.

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1/3 017 UNCLASSIFIED PROCESSING DATE--

TITLE--FOLDED BASEMENT AND STRUCTURE OF NORTH SEA AND BALTIC SEA BASINS -U-

AUTHOR--LEVIN, L.E.

COUNTRY OF INFO--USSR, BALTIC SEA

SOURCE--MOSCOW, IZVESTIYA AKADEMII NAUK USSR, SERIYA GEOLOGICHESKAYA, NO 3, 1970, PP 70-81

DATE PUBLISHED----------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, MATERIALS

TOPIC TAGS--OCEAN BASIN, SEDIMENTARY ROCK LAYER, HYDROCARBON, GRAVITY ANOMALY, GRAVITY, PETROLEUM DEPOSITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1991/0721 STEP NO--UR/0011/70/000/003/0070/0081

CIRC ACCESSION NO--AP0110452

UNCLASSIFIED

2/3 017 UNCLASSIFIED PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0110452

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RECENT BASINS OF THE NORTH AND BALTIC SEAS WERE FORMED WITHIN AN ENORMOUS DOWNWARPING OF THE WESTERN PERICRATON REGION OF THE EUROPEAN PLATFORM. THE SEDIMENTARY STRATUM OF THE PLATFORM COVER BENEATH THE WATERS OF THE NORTH SEA CONTAINS LARGE DEPOSITS OF GAS AND OIL. MARINE GEOLOGICAL AND GEOPHYSICAL WORK IS INCREASING IN THIS AREA WITH EACH PASSING YEAR. ALONG THE SOUTHERN AND EASTERN MARGINS OF THE BALTIC SEA BASIN THERE ARE LARGE CONCENTRATIONS OF HYDROCARBONS AND NUMEROUS PETROLEUM AND GAS SHOWS. THIS ARTICLE IS A REVIEW AND INTEGRATION OF GEOLOGICAL INFORMATION ON THIS REGION BASED ON 47 SOURCES. THREE GREAT MEGASTRUCTURES ARE DEFINED AND DISCUSSED IN DETAIL. THE MOST IMPORTANT CHARACTERISTICS OF THESE MEGASTRUCTURES ARE CLEARLY REFLECTED IN THE ANOMALOUS GRAVITY FIELD. FIGURE 1 IN THE TEXT IS A MAP OF THE GRAVITY FIELD ANOMALIES OF THE WESTERN PART OF THE EUROPEAN PLATFORM; FIG. 2 IS A TECTONIC MAP OF THE NORTH SEA AND BALTIC SEA BASINS. DATA ON THE SYSTEMS OF FAULTS CONTROLLING DISLOCATIONS OF THE SEDIMENTARY STRATUM AND A DESCRIPTION OF THE PRESENT DAY STRUCTURAL PLAN OF THE SMALLER UPLIFTS AND DOWNWARPS ARE INCLUDED. IT IS SIGNIFICANT THAT SECTORS OF THE EUROPEAN PLATFORM WITH STRATA HAVING MAXIMUM DIPS ARE 2.11 TIMES MORE LIKELY TO CONTAIN PETROLEUM AND GAS DEPOSITS THAT OTHER AREAS. THIS STUDY HAS ALREADY BEEN USED IN EVALUATING THE POSSIBILITIES OF FINDING PETROLEUM IN THE BALTIC SEA (L. E. LEVIN, ET AL., NEFTEGAZ. GEOL. I GEOFIZIKA, NO 7, 1968). HOWEVER, THE AUTHOR FEELS THAT THE STUDY IS OF MORE THAN LOCAL IMPORTANCE.

UNCLASSIFIED

3/3 017 UNCLASSIFIED PROCESSING DATE--090CT70

CIRC ACCESSION NO--AP0110452

ABSTRACT/EXTRACT--PETROLEUM AND GAS EXPLORATION IS NOW IN PROGRESS IN OTHER MARGINAL SEAS OF THE USSR (BLACK SEA, SEA OF OKHOTSK) AND A COMPARATIVE ANALYSIS OF TECTONIC CONDITIONS FOR PETROLEUM AND GAS ACCUMULATION IN MARINE BASINS WILL UNDOUBTEDLY FAVOR THEIR SUCCESS.

FACILITY: SCIENTIFIC RESEARCH LABORATORY OF GEOLOGY OF FOREIGN COUNTRIES, GEOLOGY MINISTRY USSR.

UNCLASSIFIED

USSR

Aluminum and Its Alloys

USSR UDC 669.715

LEVIN, L. I., ZOLOTOREVSKIY, V. S., AND ZAKHAROV, V. V., All-Union Institute of Light Alloys

"Effect of Production Conditions on the Structure of Ingots and Semifinished Pressure Molded Products Made of Al-Zn-Mg Alloys"

Ordzhonikidze, Izvestiya Vyasshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, No 1, 1973, pp 123-127

Abstract: Alloys of the following chemical composition (%) were studied: 4.5 Zn, 2.0 Mg, 0.43 Mn, 0.18 Zr, 0.1 Cr, 0.15 Fe, 0.06 Si; and 4.0 Zn, 1.6 Mg, 0.38 Mn, 0.15 Zr, 0.6 Cu, 0.12 Si, 0.13 Fe. The structure of ingots and semifinished products was studied with optical and electron microscopes, and the mechanical properties of the semifinished products, immediately after hardening, and after natural and artificial aging were examined. Mechanical properties of homogenized (at 450° C for 24 hours) ingots did not depend on the temperature (750-900° C) and rate (25-150 mm/min.) of casting. Increase in the ingot diameter from 92 to 370 mm (ultimate) decreased relative elongation by 8% (from 18 to 10%), while the mechanical properties remained unchanged. The macro- and micro-structure of the ingots showed no dependence

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USSR

LEVIN, L. I., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, No 1, 1973, pp 123-127

on the temperature and rate of casting. The ingots grains increased 2-3 times and dendrite cells by 3-4 times when the ingot diameter was increased from 92 to 370 mm. Nonhomogenized ingots contained dense dislocations, without any secondary intermetallides. Some of the ingots 370 mm in diameter contained Zn-Mg phases when the cooling temperature was below that of the solidus. Homogenized ingots contained secondary intermetallides of manganese and zirconium-containing phases. No relation was established between size, quantity, and distribution of intermetallide particles and the temperature and rate of casting, as well as the ingot diameter. Decomposition of the solid solution of Zn and Mg in aluminum was completely suppressed when ingots were cooled in water and many large particles (up to 5 μm) of the Zn-Mg phase were formed during the stepwise ingot cooling (2 hours exposure at 280°C). Heating of ingots to 380-400°C before pressure molding completely eliminated large Zn-Mg particles, which dissolved within 10 min at 400°C. Pressure molding at 350°C led to only a partial disappearance of Zn-Mg particles. All semi-finished products pressed at a rate of 6-8 m/min at 350-400°C had a completely nonrecrystallized structure after hardening, but those produced at 350°C with

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USSR

LEVIN, L. I., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, No 1, 1973, pp 123-127

a rate of $\geq$ 30 m/min had a completely recrystallized structure. Particles of manganese and zirconium-containing phases were distributed nonuniformly in the pressure molded semifinished products because of their nonuniform distribution in the ingots. The structural changes in ingots caused by the above factors did not have a decisive effect on the structure and mechanical properties of semifinished products. In order to obtain the best semifinished products with noncrystallized structure from Al-Zn-Mg alloys, the pressure molding temperature should not be below 380°C.

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USSR

UDC 669.71'5.018.9

NOVIKOV, I. I., ZOLOTOREVSKIY, V. S., LEVIN, L. I., DRITS, A. M.

"Effect of Manganese, Zirconium, and Chromium Additives on the Structure of Al-4% Zn-2% Mg Alloy Ingots,"

V sb. Struktura i svoystva legk. splavov (Structure and Properties of Light Alloys — collection of works), Moscow, Nauka Press, 1971, pp 112-117 (from RZh—Metallurgiya, No 4, Apr 72, Abstract No 4G194)

Translation: Light and transmission electron microscopes were used to study the structure of continuous casting ingots 92 mm in diameter from Al-4% Zn-2% Mg alloy with additives of 0.35% Mn, 0.15% Cr, 10.15% Zr in the cast and homogenized states. At a homogenization temperature of 450-550° decomposition of the supersaturated solid solution of Mn in Al takes place primarily in the interaxial spaces of the dendrite, and the solid solution of Zr in Al decomposes at these temperatures with the formation of coherent inclusions of the metastable phase. During slow cooling from the homogenization temperature, decomposition of the supersaturated solid solution of Zn and Mg in Al takes place the uniformity of which depends to a significant degree on the Fe and Si content in the alloy. 3 illustrations, 1 table, and bibliographic entries.

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USSR

UDC 669.715'5'721.539.4:621.785.6/7:539.27

ZAKHAROV, V. V., NOVIKOV, I. I., YELAGIN, V. I., LEVIN, L. I.

"Effect of the Duration of the Break between Quenching and Artificial Aging on the Structure and Mechanical Properties of Sheet Al-4.2% Zn-1.9% Mg Alloy with Different Manganese, Chromium, and Zirconium Content"

V sb. Struktura i svoysva legk. splavov (Structure and Properties of Light Alloys — collection of works), Moscow, Nauka Press, 1971, pp 53-57 (from RZh-Metallurgiya, No 4, Apr 72, Abstract No 4I643)

Translation: The method of measuring σ_B and $\sigma_{0.2}$ and transmission electron microscopy demonstrated that the structure and strength characteristics of Al-4.2% Zn-1.9 Mg alloy have comparatively low sensitivity to the break between the quenching and artificial aging. Small additions of Mn and Cr to this alloy and additions of Zr in solid solution weakly increase the sensitivity of the strength characteristics to the break time. The large additives of Mn and Cr which are in the form of disperse secondary intermetallides strongly increase the sensitivity of the strength characteristics of the alloy to the break between quenching and artificial aging. The method of transmission electron microscopy demonstrated that obtaining low strength characteristics in the case of a small break

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USSR

ZAKHAROV, V. V., et al., Struktura i svoysva legk. splavov, 1971, pp 53-57

time arises from a reduction in the distribution density of the particles of the hardening Z-Mg phase isolated mainly on the surface of the intermetallide of aluminum and the transition metal. 2 illustrations, 1 table, and a 6-entry bibliography.

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USSR

UDC 621.785.784:669.71'721'5'74

ZAKHAROV, V. V., LEVIN, L. I., and ROMANOVA, G. M., All-Union Institute of Light Alloys

"The Effect of 'Maturing' on Artificial Aging of the Al-Zn-Mn-Mg Alloy"

Moscow, Metallovedeniye, No 5, 1971, pp 61-62

Abstract: The effect of small additions of chromium (0.13%), zirconium (0.18%), and copper (0.17%) on the sensitivity of strength properties of an aluminum alloy with 4.5% Zn, 2.0% Mg, and 0.35% Mn to stoppage between hardening and artificial aging, ("maturing") was investigated. The investigation results are discussed with reference to the dependence of the yield point of artificially aged sheets of the alloys on a 4-hr maturing duration at 180°C. Small additions of zirconium and particularly of chromium significantly increase the sensitivity of strength properties of the aluminum alloy to maturing, but small additions of copper decrease its sensitivity. One figure, six bibliographic references.

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1/2 022 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--C CURVES REPRESENTING THE DECOMPOSITION OF THE SUPERSATURATED SOLID SOLUTION IN ALUMINUM ZINC MAGNESIUM ALLOYS CONTAINING TRACES OF

AUTHOR-(04)-ZAKHAROV, V.V., NOVIKOV, I.I., YELAGIN, V.I., LEVIN, L.I.

COUNTRY OF INFO--USSR

SOURCE--IZVEST. V. U. Z., TSVETNAYA MET., 1970, (1), 110-116

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--SOLID SOLUTION, ALUMINUM ALLOY, ZINC ALLOY, MAGNESIUM ALLOY, MANGANESE CONTAINING ALLOY, CHROMIUM CONTAINING ALLOY, ZIRCONIUM CONTAINING ALLOY, COPPER CONTAINING ALLOY, TRACE ANALYSIS, MICROALLOYING, BIBLIOGRAPHY, INTERMETALLIC COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1554 STEP NO--UR/0149/70/000/001/0110/0116

CIRC ACCESSION NO--AP0125180

UNCLASSIFIED

2/2 022 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125180

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TEMP. TIME CURVES REPRESENTING THE DECOMPOSITION OF THE SUPERSATURATED SOLID SOLUTION IN AL,MG,ZN ALLOYS CONTG. TRACES OF MN, CR, ZR, OR CU (C CURVES) WERE PLOTTED. THE ADDITION OF MN, ZR, AND ESPECIALLY CR SHARPLY REDUCED THE STABILITY OF THE SUPERSATURATED SOLID SOLUTION OF ZN AND MG IN AL. THE TRANSITION METALS REDUCED THE STABILITY OF THE SATURATED SOLUTION AS A RESULT OF THE INITIATING ACTION OF HIGHLY DISPERSED SECONDARY INTERMETALLIC COMPOUNDS FORMED IN THE ALLOY. THE INTRODUCTION OF TRACES OF CU INTO AL,MG,ZN ALLOYS CONTG. SUCH ADDITIVES COUNTERACTED THE EFFECT.

UNCLASSIFIED

USSR

UDC 518:517.392

LEVIN, M., Tallin Polytechnic Institute

"Best Integration Formulas With Weight Function X and Fixed Points"

Tallin, Izvestiya Akademii Nauk Estonskoy SSR, Fizika-Matematika, Vol 20, No 3, 1971, pp 279-284

Abstract: The article considers the question of constructing the best formula (in the sense of minimization of the residue)

$$\int_0^1 xf(x)dx = \sum_{k=1}^{n} \sum_{j=0}^{2r-1} c_k^{(j)} f^{(j)}(x_k) + R_n^{(0)}(f). \qquad (1)$$

where $0<x_1<x_2 \ldots <x_n<1$ are fixed, in the class $W_{0,L_2}^{(2r)}$ of functions $f(x)$ which on segment $[0, 1]$ have an absolutely continuous derivative of order $2r - 1$ and satisfy the conditions

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USSR

LEVIN, M., Izvestiya Akademii Nauk Estonskoy SSR, Fizika-Matematika, Vol 20, No 3, 1971, pp 279-284

$$\left(\int_0^1 [f^{(r)}(t)]^2 dt\right)^{1/2} \leqslant M, \qquad (2)$$

$$f^{(k)}(0) = f^{(k)}(1) = 0 \quad (k = 0, 1, \ldots, r-1). \qquad (3)$$

In the class $W_{L_2}^{(r)}$ of functions f(x) which have on segment [0, 1] an absolutely continuous derivative of order 2r - 1 and satisfy condition (2), the article considers the problem of constructing the best formula of the form

$$\int_0^1 xf(x)dx = \sum_{k=0}^{n+1} \sum_{j=0}^{2r-1} c_k^{(j)} f^{(j)}(x_k) + R_n(f), \qquad (4)$$

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USSR

LEVIN, M., Izvestiya Akademii Nauk Estonskoy SSR, Fizika-Matematika, Vol 20, No 3, 1971, pp 279-284

where $0 = x_0 < x_1 < \ldots < x_n < x_{n+1} = 1$ are fixed, $c_0^{(l)} = c_{n+1}^{(l)} = 0$ $(l = r, r+1, \ldots, 2r-1)$. Theorems are derived which can be used to construct formulas for the approximate calculation of double integrals in polar coordinates when the integration region is a circle.

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USSR

UDC: None

LEVIN, M. B., LYUBARSKIY, M. G., ONISHCHENKO, I. N., SHAPIRO, V. D., and SHEVCHENKO, V. I.

"Nonlinear Theory of Electron-Beam Kinetic Instability in a Plasma"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol 62, No 5, 1972, pp 1725-1732

Abstract: In earlier papers on this subject the problem of the excitation of monochromatic plasma waves was solved for the case of an instability in the monoenergetic beam in the plasma. The present paper discusses the kinetic instability which arises in the interaction between the plasma and the beam, with the release of large quantities of heat. This instability is the result of the Landau attenuation effect; a formula is given for the linear increment of the increase in oscillation manifested by the instability. In their analysis, the authors use a system of equations describing the motion of the resonance particles in the wave field and the change in the wave amplitude due to the interaction with those particles, a system valid only if the phase change of the field as a result of that interaction is neglected. Plots are given of what the authors call the phase "mixup" of the resonance particles. Connected with the Physico-Technical Institute of the

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USSR UDC: None

LEVIN, M. B., et al, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol 62, No 5, 1972, pp 1725-1732

Ukrainian Academy of Sciences, they thank Ya. B. Faynberg and R. Z. Sagdeyev for discussing the work with them, and Yu. N. Dnestrovskiy, D. P. Kostomarov, A. A. Ivanov, and T. Soboleva for their assistance in preparing it.

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USSR UDC 621.3.032.266.3

LEVIN, M. L., MINTs, A. L. - Academician, NAUMENKO, Ye. D. and FILIMONOVA, T. N., Council for Charged Particle Accelerators, Academy of Sciences of the USSR, Moscow

"Gyromagnetic Compression of Powerful, Relativistic, Dense Electron Beams of Tubular Form"

Moscow, Doklady Akademii Nauk SSSR, Vol 211, No 5, 1973, pp 1085 - 1088

Abstract: Electron beams are used to transfer large amounts of energy to small objects in brief intervals of time. This makes it advantageous to compress them to maximum density, but the high charge of the electron in relation to its mass makes this difficult. The method described in this article for compressing segments of a tubular electron beam involves three steps: a) electron tubes are rearranged into rotating electron rings moving along an axis; b) the rings are subjected to radial compression in a spatially increasing, static magnetic field; c) the compressed rings are again reformed into sections of a tubular electron beam moving parallel to the axis, differing from the initial segments by their smaller dimensions and higher density. Step a uses an apparatus described by Levin, Mints, and Naumenko in Volume 204, No 4 of this journal. The same magnetic system can be used for operation c. The apparatus for step b is schematically diagrammed in the article.

As the rings are compressed, the energy of longitudinal motion is converted to rotary motion, which can bring the ring to a complete stop or even reflect it in the

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USSR

LEVIN, M. L., et al., Moscow, Doklady Akademii Nauk SSSR, Vol 211, No 5, 1973, pp 1085 - 1088

opposite longitudinal direction; additional energy must be supplied to overcome this. The electron rings also tend to elongate in the longitudinal direction, requiring further inputs to prevent this. Techniques for achieving these manipulations are described in the article. Typical values to be achieved by this installation include a compression of the ring from a radius of 20 cm to 4 cm, a longitudinal compression from 10 cm to 1 cm, an increase in the relativistic rotation factor from 6 to 30, etc. Calculation of these factors is based on an analysis given by Levin at the Symposium on Collective Acceleration Methods, Dubna, 27 - 30 September, 1972, Document OIYaI,D9-6707,49 (1972).

Acc. Nr.: AP0029098 Ref. Code: UR 0477

PRIMARY SOURCE: Zdravookhraneniye Belorussii, 1970, Vol 16, Nr 1, pp 53-56

INFLUENCE OF THE NICOTINIC ACID AND VITAMIN B_6 ON SOME INDICES OF THE LIPID PROTEOMETABOLISM AND BLOOD COAGULATION SYSTEM IN PATIENTS WITH CORONARY ATHEROSCLEROSIS

M. L. Levin

SUMMARY

A parallel investigation of the indices of lipid proteometabolism and some components of the coagulation system in patients with coronary atherosclerosis without blood circulation insufficiency before and after treating with the nicotinic acid and vitamin B_6 was reported. A favourable influence of the nicotinic acid and vitamin B_6 on the lipid proteometabolism was marked; a normaljzing effect was produced on some blood coagulation system components.

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USSR UDC: 621.317.729:621.373.023

LEVIN, M. M., DERGACHEVA, L. F.

"An Installation for Measuring the Phase Structure of an SHF Field"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 2 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 2), Novosibirsk, 1970, pp 97-98 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A318)

Translation: A distinguishing feature of the proposed installation is the absence of movable SHF channels. The master phase shifter is a system (quadripole) of two antennas, the phase rotation introduced by this system being proportional to the spacing between antennas. A modified Froome interferometer is used to determine the phase shift introduced by the master phase shifter. Procedural and instrument errors are analyzed. The total error of the installation (at a frequency of 10 GHz) is estimated at ±5°. The estimate is confirmed by measurements of the field structure of a point source. Bibliography of one title. E. L.

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UDC 616.71-008.924.1-074:543.544.6

LEVIN, M. M.

"The Use of Ion Exchange Resins in Determining Calcium in Bone Tissue"

Moscow, Laboratornoye Delo, Vol 11, 1971, pp 694-695

Translation: In determining calcium in bone tissue with rilon B, it is necessary to remove the phosphates from solution under investigation by passing it through an ion exchange resin. This method is simpler than separating the prosphomolybdate complex with a butanol chloroform mixture in an acid medium.

Glass columns 8 to 10 mm in diameter are filled with sifted and washed AN-1 resin to a height of 20 cm. To change the resin into Cl-form, a 30 ml 5% solution of hydrochloric acid is put through the column and the column is washed several times with distilled water.

A number of specimens of bone tissue dried at 105°C are calcined in a muffle furnace at 600°C or less. The ashes are dissolved in aqua regia and boiled in a beaker for 5 to 10 min. The silution is filtered into a 200-250 ml flask and distilled water is added up to the mark. One milliliter of the solution is taken from the flask and put into a 50 ml beaker and a drop of methyl orange is added and then a 5% solution of ammonia is added dropwise until a pale pink color appears. The contents of the beaker are put through

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LEVIN, M. M., Laboratornoye Delo, Vol 11, 1971, pp 694-695

a preliminary preparation column with An-1 resin at the rate of 10 ml/min and the effluent is collected in a 150 ml beaker. The columns are washed several times with distilled water so that the volume of solution in the beakers is approximately 120 ml. Then the solution is made alkaline with sodium hydroxide to pH 12; murexide is added and the calcium is titrated with 0.01 N solution of Trilon B on the photoelectric titrimeter FET-UNIIZ. For subsequent calcium determination the columns are washed with 25 ml of a 1% solution of sodium carbonate and distilled water until neutral to litmus and then the resin is again changed over to the Cl-form.

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USSR UDC none

TURYANSKIY, V. P., LEVIN, M. M.

"An Installation for Measuring the Phase Shift Introduced by a Flat Dielectric Plate in the Three-Centimeter Band"

Tr. NII introskopii (Works of the Scientific Research Institute of Internal Inspection), 1970, vyp. 4, pp 41-42 (from RZh-Radiotekhnika, No 8, Aug 71, Abstract No 8A308)

Translation: A plane-parallel sheet of dielectric has a permittivity of 10 or less and a loss tangent of 0.1 or less, and is studied by transillumination in a two-channel phase meter. The sheet is moved between the antennas of the instrument and the inserted phase shift changes as a consequence of the variation in the characteristics of the sheet and the conditions of the experiment. The error in measurement of the change in phase displacement is approximately one degree. The installation can be used for checking flat sheets of dielectric during production, in checking the blanks for lens antennas, for quality control of construction materials, in measuring the fields scattered by various bodies, and in physical research. A. K.

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USSR UDC 538.4

BAKANOV, Yu. A., DRONNIK, L. M., LEVIN, M. N., MAKAREVICH, V. K., RESHET'KO, L. M., STRIZHAK, V. Ye., TOLMACH, I. M., TROITSKIY, S. R., YANTOVSKIY, Ye. I.

"Experimental Study of Liquid-Metal Induction Machine in Pump Mode"

7-ye Soveshch. po Magnit. Gidrodinamike. T. 1 [Seventh Conference on Magnetic Hydrodynamics, Vol 1], Riga, Zinatnye Press, 1972, pp 20-23, (Translated from Referativnyy Zhurnal, Mekhanika, No 11, 1972, Abstract No 11 B43 by V. V. Blagov).

Translation: The operation of a liquid-metal induction machine in the pump mode was studied in a potassium circuit with a working pressure of up to 60 kg/cm^2. The working characteristics of the machine are presented for a temperature of 500°.

The experimental results allowed the relationship of the dimensionless criterion $\Pi = \Delta P V_s l/\sigma U^2$ to the velocity ratio $V/V_s = 1 - S$ to be established (where V_s is the synchronous speed of the rotating field, V is the velocity of the metal, ΔP is the pressure drop developed, S is the slipping, σ is the conductivity, U is the applied voltage). As the temperature changes from

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BAKANOV, Yu. A., DRONNIK, L. M., LEVIN, M. N., MAKAREVICH, V. K., RESHET'KO, L. M., STRIZHAK, V. Ye., TOLMACH, I. M., TROITSKIY, S. R., YANTOVSKIY, Ye. I., 7-ye Soveshch. po Magnit. Gidrodinamike. T. 1, Riga, Zinatnye Press, 1972, pp 20-23.

280 to 500° and the voltage varies from 80 to 150 v, the dependence of Π on V/V_s is universal. The maximum head is produced at small flow rates, depends on the applied voltage and where T = 500° and ΔU = 150 v is about 37 kg/cm^2; the efficiency of the machine is about 24% under these conditions. Where T = 300°, these figures are 42 and 30% respectively. The total operating time of the machine was 120 hours.

Aluminum and Its Alloys

USSR UDC 669.71.053.4

ARONZON, V. L., BERKH, V. I., LEVIN, M. V., LOKSHIN, R. G.

"Automatic Control of Technological Processes of Alumina Production"

Avtomatiz. Proizv. Protsessov. Tsvet. Metallurgii [Automation of Production Processes in Nonferrous Metallurgy -- Collection of Works], Ordzhonikidze, "Ir" Press, 1971, pp 73-75, (Translated from Referativnyy Zhurnal, Metallurgiya, No 5, 1972, Abstract No 5 G212 by G. Svodtseva).

Translation: In developing algorithms for control of the hydrochemical cycle of Al_2O_3 production from bauxite in the area of the nominal mode, based on the shortage of Al_2O_3, a control strategy was developed calling for two possible operating modes of the automated control system: the mode of independent control of individual sectors of the hydrochemical cycle and the mode of centralized control. In both modes, control is conducted by a two-stage system. In the independent control mode, a universal computer checks the condition of production by cyclical interrogation of the primary parameters. A special algorithm has been developed, allowing timely determination of the location and reasons for disruptions in the technological mode. Algorithms for optimization of the hydrochemical cycle of production of Al_2O_3 by the Bayer method have been developed, as well as algorithms for optimization of individual conversions in

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